

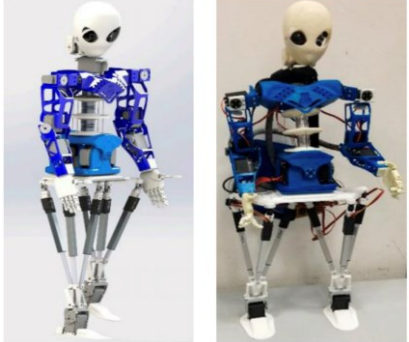
Available LARM Master thesis

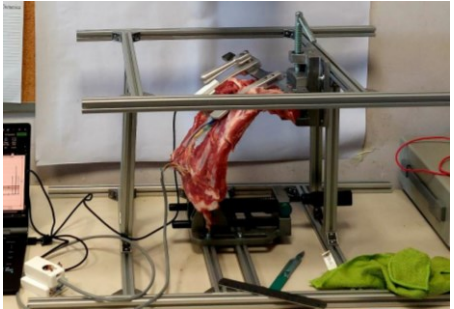
LARM2 webpage: <https://larm2.ing.uniroma2.it/>

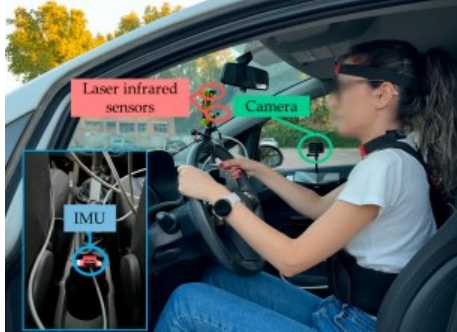
LARM2: Laboratory of Robot Mechatronics


Dept of Industrial Engineering; University of Rome Tor Vergata


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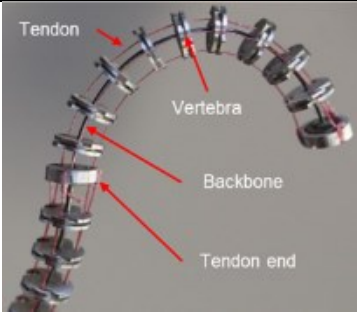
Design and testing of LARMbot humanoid	Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it
Subject/workplan: Design, performance analysis and assembly of a prototype for lab testing Period of work: at least 3 months Main references of background: <ol style="list-style-type: none">1. Ceccarelli M, Cafolla D, Russo M, Carbone G (2017) LARMBot Humanoid Design Towards a Prototype. <i>MOJ int. Jnl Applied Bionics and Biomechanics</i> 1(2): 00008. DOI: 10.15406/mojabb.2017.01.000082. Axel Fort; Med Amine Laribi; Marco Ceccarelli. Design and performance of a LARMbot PK arm prototype. <i>International Journal of Humanoid Robotics</i>, Vol. 19, No. 2 (2022) 2250009 (16 pages). https://doi.org/10.1142/s0219843622500098	


Mechatronic design of a testing machine for biomechanics evaluation	Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it
Subject/workplan: Design and assembly of a prototype for lab testing Period of work: at least 3 months Main references of background: <ol style="list-style-type: none">1. Puglisi, L., Ceccarelli, M., and Ambrogi, V., An Experimental Study of Feasibility of a Mini-Invasive Fixator for Rib Osteosynthesis. <i>ASME. J. Med. Devices</i>. Mar 2023, 17(1): 011001 (5 pages. Paper No: MED-22-1042. (online October 5, 2022). doi: https://doi.org/10.1115/1.40558612. Ceccarelli M., Taje R., Papuc P.E., Ambrogi V., An Analysis of Respiration with the Smart Sensor SENSIRIB in Patients Undergoing Thoracic Surgery. <i>Sensors</i>. 2022; 22(4):1561. https://doi.org/10.3390/s22041561	

<p>Mechatronic design and testing of a sensed suit for car driver monitoring (Erasmus program)</p>	<p>Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Period of work: at least 3 months Main references of background:</p> <ol style="list-style-type: none"> 1. Garrosa, M., Ceccarelli, M., Díaz, V. (2022). Problems and Requirements in Impact Analysis from Vehicle Accidents. In: Niola, V., Gasparetto, A., Quaglia, G., Carbone, G. (eds) Advances in Italian Mechanism Science. IFToMM Italy 2022 pages 346-354. Springer, Cham. https://doi.org/10.1007/978-3-031-10776-4_40 2. Garrosa M, Ceccarelli M, Díaz V, Russo M. Experimental Validation of a Driver Monitoring System. <i>Machines</i>. 2023; 11(12):1060. https://doi.org/10.3390/machines11121060 	

<p>Test activity with a prototype for motion assistance of leg or arm</p>	<p>Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Subject/workplan: Assembly and testing of a prototype for lab testing Period of work: at least 3 months Main references of background:</p> <ol style="list-style-type: none"> 3. Ceccarelli, M.; Riabtsev, M.; Fort, A.; Russo, M.; Laribi, M.A.; Urizar, M. Design and Experimental Characterization of L-CADEL v2, an Assistive Device for Elbow Motion. <i>Sensors</i> 2021, 21, 5149. https://doi.org/10.3390/s21155149 4. Venkata Sai Prathyush, I.; Ceccarelli, M.; Russo, M. Control Design for CABLEankle, a Cable Driven Manipulator for Ankle Motion Assistance. <i>Actuators</i> 2022, 11, 63. https://doi.org/10.3390/act11020063 	

<p>Programming an industrial/service -like manipulation with SCARA robot EPSON</p>	<p>Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Subject/workplan: Design, programming and running of manipulation with SCARA robot EPSON for lab testing Period of work: at least 3 months Main references of background:</p> <ol style="list-style-type: none"> 1. Ceccarelli M., "A Manipulation Analysis for Robot Programming", <i>Int. Journal Robotica</i>, 1999, Vol.17, pp.529-541. 2. Epson, User's manual for Epson-SCARA-T3, 2021 	

<p>Development of a 3D-printed continuum robot</p>	<p>Supervisors: Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Subject/workplan: Design, prototyping and control of a snake- or tendril-like flexible robot Period of work: at least 3 months (suggested 6 months; possible collaboration with the University of Poitiers/Nottingham) Main references of background:</p> <ol style="list-style-type: none"> 1. Russo, M. et al. "Continuum robots: An overview." <i>Advanced Intelligent Systems</i>, 5(5), 2200367, 2023. 2. Troncoso, D.A. et al. "A Continuum Robot for Remote Applications: From Industrial to Medical Surgery With Slender Continuum Robots." <i>IEEE Robotics & Automation Magazine</i>, 2022. 	

<p>Technical-Historical analysis of a robot, machine or mechanism by prototype testing</p>	<p>Supervisors: Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Subject/workplan: Historical evolution and performance analysis of a machine or mechanism of interest Period of work: at least 2 months Main references of background:</p> <ol style="list-style-type: none"> 1. Irakoze V., Marco Ceccarelli M., and Russo M., Historical and Technical Analysis of Harmonic Drive Gear Design, in: <i>Multibody Mechatronic Systems - MuSME 2021, MMS 110</i>, Springer Nature Switzerland AG 2022, Cham, pp. 46–55, 2022. https://doi.org/10.1007/978-3-030-88751-3_5 2. Ceccarelli, M.; Cocconcelli, M. Italian Historical Developments of Teaching and Museum Valorization of Mechanism Models. <i>Machines</i> 2022, 10(8), 628; https://doi.org/10.3390/machines10080628. 3. Russo, Matteo, and Jose A. Robles-Linares. "A Brief History of Piano Action Mechanisms." <i>Advances in Historical Studies</i> 9.05 (2020): 312. 	

<p>Performance analysis of a robot, machine or mechanism</p>	<p>Prof Marco Ceccarelli marco.ceccarelli@uniroma2.it Prof Matteo Russo matteo.russo@uniroma2.it</p>
<p>Subject/workplan: design characterization and performance analysis of a machine or mechanism of interest via simulation or prototype Period of work: at least 3 months Main references of background:</p> <ol style="list-style-type: none"> 1. Titov, A.; Russo, M.; Ceccarelli, M. Design and Operation of a Gripper for a Berthing Task. <i>Inventions</i> 2023, 8, 82. https://doi.org/10.3390/inventions8040082 2. Demirel, M., Kiper, G., Carbone, G., & Ceccarelli, M. (2023). Design of a novel hybrid cable-constrained parallel leg mechanism for biped walking machines. <i>Robotica</i>, 1-16. doi:10.1017/S0263574723000140 	